
Appendix A Survey Methodology

A mailing list of all Duwamish businesses (identified by the ZIP codes listed in Appendix D) was purchased from NameFinders, Inc. According to this source, there are 412 industrial firms located in the Duwamish corridor; a survey was sent to the owners of each of these businesses. ("Industrial firms" includes those businesses within Division D Manufacturing, Major Groups 20-39 of the Standard Industrial Classification.)

The purpose of the survey was to obtain information on Duwamish industries' waste products and material inputs that could potentially be exchanged with other businesses. The overall response rate to the survey was 72% after two mailings and follow-up phone interviews. A total of 296 firms participated in the survey, with 55 (13%) responding to the mail survey and 241 (58%) taking part in the phone interview.

The first section of the survey asked the business owner to verify the mailing and physical address, contact name, phone number, and a brief description of the type of business. The second section contained a few introductory questions about previous participation in waste exchanges and interest in learning more about the Duwamish Coalition.

The remainder of the survey requested information about any materials the business disposed of but could potentially be used by another manufacturing business, and materials they need for inputs that might be disposed of by another business. Possible available materials were broadly defined to include wastes; manufacturing by-products; overstock, out-of-date, over-issued, or damaged goods; and demolition materials. Possible wanted materials were defined as feedstocks; raw materials; building materials; and other usable items their company might need or use. The inclusion of so many types of materials was intended to help them think creatively about their business's manufacturing process. To help them think through this process and fill the survey out correctly, an example was provided of a firm that generated slightly contaminated isopropanol alcohol on a continuous basis. A narrative corresponding to this example was described in the cover letter to provide a local example of an actual waste exchange. (Please refer to Appendix B for copies of the survey instruments.)

A pre-test of the business survey was conducted the week of November 18, 1996 based on a list of 25 businesses provided by the Environmental Coalition of South Seattle (ECOSS). Business owners were contacted by phone to explain the purpose of the survey and seek their interest in participating in the pre-test. Seventeen businesses agreed to participate, and the cover letter printed on Duwamish Coalition letterhead and survey were faxed that day. In the cover letter, the business owners were requested to fax back the survey within the next two days.

Four surveys were returned by fax. Follow-up phone calls were made to the remaining 13 companies on Friday, November 22. The business owners that could be reached were asked a

routine set of questions to elicit feedback, including the following:

- Were the survey instructions clear? If not, how could they be improved?
- Any comments about the information requested.
- Will the cover letter interest people enough to fill out the survey. If not, how could it be improved?
- Whether the timing of the survey (December) and two-week allowance for completing the survey was realistic.

Eight businesses were reached by phone, which combined with the four that returned the survey, resulted in receiving feedback from 12 businesses. The feedback was generally very positive, and the business owners seemed to be interested in waste exchanges. Based on the results of the pre-test, we proceeded with the survey without any changes to the cover letter or survey instrument.

The two mailings of the survey were sequenced approximately five weeks apart to provide sufficient time to respond but to not allow too much time to elapse between mailings. The first mailing occurred on December 3 and the second mailing was January 9, 1997. The cover letter was on Duwamish Coalition letterhead and co-signed by King County Executive Gary Locke and King County Council member Kent Pullen, who both served as Co-Chairs of the Coalition. The first sentence read, "Save money by finding a market for your waste products!" to pique their interest in the survey.

The follow-up phone calls to businesses that had not responded to the mail survey were made during the month of February. The three interviewers who contacted the businesses were directed to obtain the same information that the survey contained. In many cases, they needed to explain how waste exchanges work because this was a new concept or terminology. The phone interviews also gave both the interviewer and business owner the opportunity for dialogue and additional information about the company that was not possible through the mail survey. These discussions helped augment the survey findings.

After the results of the survey were compiled, a follow-up memo was sent to all 412 industrial businesses. The purposes of the memo were to:

- Share results of the survey.
- Follow up with those businesses asking for recycling assistance.
- Publicize a new environmental resource available to Duwamish businesses (the Environmental Extension Service).

Printed on bright yellow, legal-sized paper, the first page of the memo summarized the survey results and briefly outlined the free technical service available from IMEX and the Environmental Extension Service. The second page included a comprehensive list of the names and phone numbers of local technical assistance programs and recycling service providers. (Please see Appendix B for a copy of the follow-up mailing.)

Appendix B Survey Instruments

This appendix includes copies of:

- The cover letter (dated November 18, 1996) and survey form for the pre-test.
- The cover letter (dated December 3, 1996) and survey form for the initial mailing.
- The cover letter (dated January 9, 1997) and survey form for the second mailing.
- The follow-up memo (dated March 28, 1997) and list of local technical assistance, specialty and full-service recycling companies.

Save money by finding a market for your waste products! King County, through the Duwamish Coalition, is interested in facilitating waste exchanges among businesses in the Duwamish corridor. To that end, the accompanying survey asks you to identify your waste products and raw material production needs.

Information from this survey will be used to match generators of industrial wastes with other manufacturers who can use these by-products. For example, the Industrial Materials Exchange (IMEX), based in Seattle, recently facilitated an agreement between a medical diagnostic equipment manufacturer and a foundry located within 10 miles of each other. The equipment manufacturer generates slightly contaminated isopropanol which the foundry uses to give a smooth finish to its castings. The exchange saved the medical equipment firm \$8,000 per year in avoided disposal costs and the foundry \$4,000 per year on the cost of the solvent.

We have contacted your company to pre-test the survey. As a follow-up to our phone call, we have faxed the survey and cover letter. Because this is a pre-test, we are interested in receiving a prompt response and request that you fax the completed survey to 343-9819 by November 19.

I encourage you to take the time to fill out the enclosed survey. This survey represents an opportunity for your company to uncover markets for your manufacturing by-products, surplus materials and wastes. You may also find low-cost raw materials that your company needs. If you have any questions, I can be reached by phone at 205-0711.

Sincerely,

Lucy Sandler Auster
Economic Development Specialist

P.S. IMEX is a free service. For more information regarding IMEX, please call 296-4899 or visit the Internet site at <http://www.metrokc.gov/lhwmp/cesqg/imextoc.html>

Aerospace Machinists District Lodge 751
The Boeing Company
Delta Marine Industries
The Duwamish Committee
Duwamish Industrial Education Center
Environmental Coalition of South Seattle
Fraser Boiler, Inc.
Foss Environmental Services
Galvin Flying Service
Georgetown Crime Prevention Council
Key Bank
Kidder, Mathews & Segner
King County
King County Labor Council, AFL-CIO
Long Painting Company
Muckleshoot Indian Tribe
PACCAR, Inc.
People for Puget Sound
Port of Seattle
Preston, Gates & Ellis
City of Renton
Seafirst Bank
City of Seattle
Seidelhuber Iron and Bronze Works
SGA Corporation
SODO Business Association
South Park Area Redevelopment Committee
State Sen. Margarita Prentice
State Rep. Eileen Cody
State Rep. Velma Veloria
Suquamish Indian Tribe
City of Tukwila
U.S. Environmental Protection Agency
Washington State Dept. of Ecology
Washington Environmental Council
Washington State Dept. of Natural Resources

Dear Business Owner:

Save money by finding a market for your waste products! King County, through the Duwamish Coalition, is interested in facilitating waste exchanges among businesses in the Duwamish corridor. To that end, the accompanying survey asks you to identify your waste products and raw material production needs.

Information from this survey will be used to match generators of industrial wastes with other manufacturers who can use these by-products. For example, the Industrial Materials Exchange (IMEX), based in Seattle, recently facilitated an agreement between a medical diagnostic equipment manufacturer and a foundry located within 10 miles of each other. The equipment manufacturer generates slightly contaminated isopropanol which the foundry uses to give a smooth finish to its castings. The exchange saved the medical equipment firm \$8,000 per year in avoided disposal costs and the foundry \$4,000 per year on the cost of the solvent.

We encourage you to take the time to fill out the enclosed survey. This survey represents an opportunity for your company to uncover markets for your manufacturing by-products, surplus materials and wastes. You may also find low-cost raw materials that your company needs. If you have any questions, please phone the Cascadia Consulting Group at 343-9759.

Sincerely,

Gary Locke
King County Executive
County Council
Co-Chair, Duwamish Coalition
Coalition

Kent Pullen
Metropolitan King
Co-Chair, Duwamish

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Aerospace Machinists District Lodge 751
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Georgetown Crime Prevention Council
Key Bank
Kidder, Mathews & Segner
King County
King County Labor Council, AFL-CIO
Long Painting Company
Muckleshoot Indian Tribe
PACCAR, Inc.
People for Puget Sound
Port of Seattle
Preston, Gates & Ellis
City of Renton
Seafirst Bank
City of Seattle
Seidelhuber Iron and Bronze Works
SGA Corporation
SODO Business Association
South Park Area Redevelopment Committee
State Sen. Margarita Prentice
State Rep. Eileen Cody
State Rep. Velma Veloria
Suquamish Indian Tribe
City of Tukwila
U.S. Environmental Protection Agency
Washington State Dept. of Ecology
Washington Environmental Council
Washington State Dept. of Natural Resources

January 9,

1997

Dear Business Owner:

Save money by finding a market for your waste products! King County, through the Duwamish Coalition, is interested in facilitating waste exchanges among businesses in the Duwamish corridor. To that end, the accompanying survey asks you to identify your waste products and raw material production needs.

Information from this survey will be used to match generators of industrial wastes with other manufacturers who can use these by-products. For example, the Industrial Materials Exchange (IMEX), based in Seattle, recently facilitated an agreement between a medical diagnostic equipment manufacturer and a foundry located within 10 miles of each other. The equipment manufacturer generates slightly contaminated isopropanol which the foundry uses to give a smooth finish to its castings. The exchange saved the medical equipment firm \$8,000 per year in avoided disposal costs and the foundry \$4,000 per year on the cost of the solvent.

We encourage you to take the time to fill out the enclosed survey. This survey represents an opportunity for your company to uncover markets for your manufacturing by-products, surplus materials and wastes. You may also find low-cost raw materials that your company needs.

Please return the survey, by fax or the enclosed self-addressed, stamped envelope, by January 29. If you have any questions, please phone the Cascadia Consulting Group at 343-9759.

Sincerely,

Materials Exchange Survey
Duwamish Corridor Industries

Return Address: Cascadia Consulting Group
811 First Avenue, #480

9-Digit ZIP: _____

Type of Business: _____

Introductory Questions:

1. Have you ever or are you currently participating in a materials exchange? ☐ Yes ☐ No
2. Are you interested in participating in materials exchanges? ☐ Yes ☐ No ☐ Maybe
3. Are you a member of the Duwamish Coalition? ☐ Yes ☐ No
If no, would you like more information about it? ☐ Yes ☐ No

Instructions for filling out the survey:

Please indicate your company's available and wanted materials on the following pages.

Possible Available Materials

- wastes
- manufacturing by-products
- overstock
- out-of-date, over-issued, or damaged goods
- demolition materials

Possible Wanted Materials

- feedstocks
- raw materials
- building materials
- other usable items your company may need or can use

Make a separate entry for each material and check either "available" or "wanted." Please describe ONE material per section. Space is provided for 9 materials; photocopy the form for additional materials, if needed. An example is provided below:

EXAMPLE: Check one: ☐ Available ☐ Wanted

Material Classification (select the category that best describes the material you are listing):

- | | | |
|--|---|---|
| <input type="checkbox"/> Acid | <input type="checkbox"/> Laboratory Chemicals | <input type="checkbox"/> Plastic & Rubber |
| <input type="checkbox"/> Alkali | | <input type="checkbox"/> Textile & Leather |
| <input type="checkbox"/> Other Inorganic Chemicals | | <input type="checkbox"/> Paint & Coating |
| <input type="checkbox"/> Solvent | | <input type="checkbox"/> Metal & Metal Sludge |
| <input type="checkbox"/> Other Organic Chemicals | | <input type="checkbox"/> Oil & Wax |

☐ Glass

☐ Industrial & Other
Equipment

☐ Wood & Paper

☐ Construction Debris

☐ Container & Pallet

☐ Miscellaneous Material

Name & description of material (include concentration, contamination for chemicals): _____

Quantity: _____ per ☐ Day ☐ Week ☐ Month ☐ Quarter
☐ _____ Year

Frequency: ☐ One time ☐ Variable ☐ Continuous

Check one: ☐ **Available** ☐ **Wanted**

Material Classification (select the category that best describes the material you are listing):

- | | | |
|--|---|---|
| <input type="checkbox"/> Acid | <input type="checkbox"/> Plastic & Rubber | <input type="checkbox"/> Industrial & Other Equipment |
| <input type="checkbox"/> Alkali | <input type="checkbox"/> Textile & Leather | <input type="checkbox"/> Wood & Paper |
| <input type="checkbox"/> Other Inorganic Chemicals | <input type="checkbox"/> Paint & Coating | <input type="checkbox"/> Construction Debris |
| <input type="checkbox"/> Solvent | <input type="checkbox"/> Metal & Metal Sludge | <input type="checkbox"/> Container & Pallet |
| <input type="checkbox"/> Other Organic Chemicals | <input type="checkbox"/> Oil & Wax | <input type="checkbox"/> Miscellaneous Material |
| <input type="checkbox"/> Laboratory Chemicals | <input type="checkbox"/> Glass | |

Name & description of material (include concentration, contamination for chemicals): _____

 Quantity: _____ per ☐ Day ☐ Week ☐ Month ☐ Quarter
 ☐ Year
Frequency: ☐ One time ☐ Variable ☐ Continuous**Check one:** ☐ **Available** ☐ **Wanted**

Material Classification (select the category that best describes the material you are listing):

- | | | |
|--|---|---|
| <input type="checkbox"/> Acid | <input type="checkbox"/> Plastic & Rubber | <input type="checkbox"/> Industrial & Other Equipment |
| <input type="checkbox"/> Alkali | <input type="checkbox"/> Textile & Leather | <input type="checkbox"/> Wood & Paper |
| <input type="checkbox"/> Other Inorganic Chemicals | <input type="checkbox"/> Paint & Coating | <input type="checkbox"/> Construction Debris |
| <input type="checkbox"/> Solvent | <input type="checkbox"/> Metal & Metal Sludge | <input type="checkbox"/> Container & Pallet |
| <input type="checkbox"/> Other Organic Chemicals | <input type="checkbox"/> Oil & Wax | <input type="checkbox"/> Miscellaneous Material |
| <input type="checkbox"/> Laboratory Chemicals | <input type="checkbox"/> Glass | |

Name & description of material (include concentration, contamination for chemicals): _____

 Quantity: _____ per ☐ Day ☐ Week ☐ Month ☐ Quarter
 ☐ Year
Frequency: ☐ One time ☐ Variable ☐ Continuous~~**Check one:** ☐ **Available** ☐ **Wanted**~~

Material Classification (select the category that best describes the material you are listing):

- | | | |
|--|---|---|
| <input type="checkbox"/> Acid | <input type="checkbox"/> Plastic & Rubber | <input type="checkbox"/> Industrial & Other Equipment |
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| <input type="checkbox"/> Other Organic Chemicals | <input type="checkbox"/> Oil & Wax | <input type="checkbox"/> Miscellaneous Material |
| <input type="checkbox"/> Laboratory Chemicals | <input type="checkbox"/> Glass | |

Name & description of material (include concentration, contamination for chemicals): _____

Quantity: _____ per ☐ Day ☐ Week ☐ Month ☐ Quarter
☐ Year

Frequency: ☐ One time ☐ Variable ☐ Continuous

Appendix C North American Materials Exchange Programs

A total of 55 materials exchange programs were identified across North America. (See Attachment A for contact information.) Most distribute their listings by publishing catalogs or newsletters. Currently, 10 of the exchanges also make their information available on computerized Bulletin Board Systems (BBSs) and 12 are accessible on the World Wide Web¹. Attachment B lists the material exchange Internet addresses and BBSs.

The various exchanges' listings of "materials wanted" may provide markets for wastes produced in the Duwamish corridor. Further, feedstocks for existing and future industry in the corridor may come from the "materials available" listings.

Currently, a number of "mini-exchanges" (serving small geographic areas) operate in California, Minnesota, Iowa, and Illinois. However, due to the limited number of materials and markets, these systems are not as successful as larger exchange programs. The match-making odds are just too low. While King County can work to promote waste exchanges within the corridor, the most success will be found when tied to a larger program, such as IMEX. Exchanges occur between companies separated by thousands of miles, as well as those within the same metropolitan area. It is important that the Duwamish listings be compatible with other exchanges operating in the region and across the country.

¹ Bill Lawrence of King County's IMEX program recently attended a workshop for materials exchange coordinators. At the meeting, there was a strong consensus that the Internet format is preferable to BBS. A proposed goal is to link all materials exchange programs through the Internet.

Attachment A and B

(These pages were not available electronically.)

Alternatives are at:

<http://www.metrokc.gov/hazwaste/imex/exchanges.html>

<http://epainotes1.rtpnc.epa.gov:7777/r10/owcm.nsf/recycle/recbooks#prevent>

Appendix D Duwamish Activity in the IMEX System

The first step in gauging Duwamish businesses' activity in IMEX was to identify these companies in the IMEX database. The Duwamish corridor includes all of the land bordering the Duwamish River and extending along part of Elliot Bay. Its approximate borders are Jackson Street to the north, Interstate 5 to the east, Interstate 405 to the south and Marginal Way to the west. However, it is not practical to use these street boundaries when searching through large amounts of data. ZIP codes give a reasonable approximation of the corridor. Duwamish area ZIP codes, and the corresponding carrier routes, are listed in Table D-1.

Table D-1 Duwamish Area ZIP Codes

ZIP Codes	Carrier Routes
98055	5503
	5531
98118	1824 <i>partial</i>
98106	0601 <i>partial</i>
	0612 <i>partial</i>
98108	0801
	0802 <i>partial</i>
	0803
	0804
	0807
	0810
	0811 <i>partial</i>
	0814 <i>partial</i>
	0819
	0822
	0823
	0824 <i>partial</i>
	0833
98126	2601 <i>partial</i>
98134	all
98168	6803
	6804 <i>partial</i>
	6814 <i>partial</i>
98178	7809
	7806 <i>partial</i>

Records were selected from the IMEX database using the ZIP code (carrier routes are not always stored in the database). As shown in Table D-2, a total of 543 businesses have placed an IMEX ad and/or requested a copy of the catalog during IMEX's seven-year history. (It should be noted that they are not all industrial companies.)

Table D-2 Duwamish Area Businesses Included in the IMEX System
(1989 - 1996)

ZIP Code	<i>Count of Duwamish Area Businesses</i>				
	Placed IMEX Ad	Requested IMEX Catalog	Overall		
98055	10	38	48	9%	
98106	9	23	32	6%	
98108	31	140	171	31%	
98118	0	0	0	0%	
98126	3	11	14	3%	
98134	28	210	238	44%	
98168	8	27	35	6%	
98178	1	4	5	1%	
Overall	90	453	543	100%	

Appendix E Bibliography

(This was not available electronically)

Appendix F Collaborative Opportunities

At least three local agencies and one non-profit organization offer services that parallel Duwamish Coalition objectives. Specific opportunities for collaboration are described below.

IMEX has significant experience facilitating materials exchange and staff are very interested in continuing to participate in King County's efforts. This partnership avoids duplicated efforts.

Discussions with the **Clean Washington Center** indicate that they would be helpful in subsequent implementation projects. Staff may be available to:

- Assist in matchmaking between generator and user
- Assist with preliminary screening of potential matches
- Gather follow-up information regarding exchanges
- Work with generators, users, and intermediate processors to characterize materials
- Help to develop specifications for the use of waste materials as feedstock
- Perform manufacturing process assessments
- Provide technical assistance to businesses considering using waste materials—including financing assistance, engineering services, remediation services, real estate brokerage assistance and marketing strategy development

King County Commission for Marketing Recyclable Materials staff report a strong interest in cooperating in this venture. They have the capability to:

- Assist with market analysis
- Develop marketing strategies
- Enhance marketing for products with recycled material content
- Work with manufacturers to produce products with recycled materials or increase recycled material content
- Research sources of feedstock material

The **Environmental Coalition of South Seattle (ECOSS)** provides technical assistance to businesses in the Duwamish corridor. They indicated that the corridor's major industries are painting, wire rope manufacturing, fiberglass boat building, assembly work, repair work, distribution companies and food service manufacturing and distribution. In addition, they are currently managing King County's Environmental Extension Service.